DOCUMENT RESUME

ED 322 714 FL 018 669

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TITLE ESL Teaching and Learning Styles at the University of the Americas, Puebla, Mexico.
PUB DATE Mar 90
NOTE 25p.; Paper presented at the Annual Meeting of the Teachers of English to Speakers of Other Languages (24th, San Francisco, CA, March 6-10, 1990).
PUB TYPE Speeches/Conference Papers (150) -- Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Style; College Faculty; College Students; Comparative Analysis; *English (Second Language); Foreign Countries; Higher Education; Language Research; *Second Language Instruction; *Second Language Learning; Student Attitudes; Surveys; Teacher Attitudes; Teaching Styles
IDENTIFIERS Preference Data; *University of the Americas (Mexico)

ABSTRACT

A summary is presented of research on learning and teaching styles in English as a Second Language, and of results of learning and teaching style preference surveys conducted at a Mexican university in 1989. The students surveyed demonstrated much more cognitive flexibility or willingness to learn through different cognitive modes than was expected. University of the Americas (UDLA) male teachers showed a strong preference for competitive teaching, but competitive learning styles were given the least preference by students. Neither UDLA students nor teachers showed a preference for impulsive learning or teaching. The majority of students felt they could learn well by employing any or all of the four perceptual modes: auditory, visual, kinesthetic, and tactile. It was concluded that: (1) style matching, while sometimes desirable, may be impractical on a large scale; (2) students could occasionally be grouped according to preferred learning styles; and (3) a special effort could be made to help students develop increased cognitive flexibility when they demonstrate that they are bound to only a few learning styles. Contains 28 references. (Author/GLR)

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ESL TEACHING AND LEARNING STYLES
at the University of the Americas, Puebla, Mexico

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Presented at the 24th Annual TESOL Convention
San Francisco, CA
March 7, 1990

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ESL Teaching and Learning Styles
at the University of the Americas, Puebla, Mexico

ABSTRACT

This article summarizes research in learning and teaching styles and also discusses the results of learning style and teaching style preference surveys conducted at a Mexican university in 1989. It was found that the students surveyed demonstrated much more cognitive flexibility, that is, willingness to learn through different cognitive modes, than was expected. Comparisons between preferred learning styles and preferred ESL teaching styles revealed considerable agreement, although areas of disagreement are noted and discussed. Copies of the surveys are included in the hope that colleagues will use them to survey preferred teaching and learning styles in their schools.

ESL Teaching and Learning Styles
at the University of the Americas, Puebla, Mexico

BIOGRAPHICAL DATA

Thomas Bauder received his Doctor of Arts in Education degree from George Mason University in 1987. During the 1988-1989 school year he taught undergraduate ESL as well as teacher training courses in the MAT program at the University of the Americas, Puebla, Mexico. He is currently CAI Coordinator at Woodrow Wilson Senior High School in Washington, D.C.

Jacquelyn Milman received her EdD degree from the University of Kentucky. From 1987 to 1989, she was a Fulbright Fellow at the University of the Americas, Puebla, Mexico, where she taught ESL teacher training courses in the MAT program, coordinated the MAT program and directed the Foreign Language Department. She currently teaches ESL teacher training courses at the University of Guam at Yigo.

ESL Teaching and Learning Styles
at The University of the Americas, Puebla, Mexico

INTRODUCTION

Learning styles continue to be an important topic to TESOL. Several articles in the TESOL QUARTERLY (Reid, 1987; Abraham, 1985; Hansen, 1984; Stansfield & Hansen, 1983) attest to this fact. An additional dimension to this interest is the relationship between learning styles and teaching styles. It is believed that students learn best when taught according to their preferred learning styles. In addition, it seems that teachers work more comfortably and effectively with students whose learning styles are similar to those of the teacher.

Both learning and teaching styles seem to be acquired, although additional styles can be consciously learned. Many experts (Dunn & Dunn, 1979; Kuchinskas, 1979; Ramirez, Macaulay, Gonzalez, Cox & Perez, 1974; Bennett, 1986) agree that teachers tend to teach according to their preferred learning styles, not those of their students. Students whose learning styles happen to match those of the teacher tend to do better than those whose learning styles clash with those of the teacher. It has also been found that teachers can learn to teach to a variety of learning styles, if they are given appropriate information and training. Consequently, it is important to develop simple, reliable instruments that will determine teaching and learning styles. Teachers need this information so they can provide instruction that permits optimal learning.

A Recent Survey of ESL Learning Styles

Reid (1987) created a survey to be used with ESL students in American universities. She surveyed 1234 ESL students in U.S. colleges from 98 countries who were native speakers of one of 52 different languages. She found several clear preferences among linguistic, cultural and academic groups. However, information cited in her study raises questions about these results. Reid, in her conclusions, suggests that learning styles may change according to the learning situation.

> According to Schmeck (1981) context and task influence the learning style of native speakers of English, many individuals can change their strategies in response to the unique contextual demands of the instruction, the context, and the task." (p. 100).

How then would an ESL student answer Reid's survey questions such as "I prefer to work by myself."? No clear context is given.

The study we conducted also summarizes the results of a survey of learning styles. Teaching styles were examined as well. To avoid what seems to be a weakness in Reid's study context-specific questions were designed. (See Appendices II and

III.) A typical question from the survey would be

> I learn English better when I can perform a role play than when I watch others perform a role play.

The questions in the survey to be discussed in this paper also require the student to choose between two contrasting styles. The example shown above contrasts kinesthetic and visual learning styles. (See Appendix I.)

RESEARCH QUESTIONS

1. What are the preferred learning styles of the ESL students surveyed?

2. Are there any learning styles shared by students according to demographic or academic factors?

3. What are the preferred teaching styles of the ESL teachers surveyed?

4. Are there any teaching styles shared by teachers according to demographic, cultural or academic factors?

5. Is there a match or a mismatch among learning and teaching styles?

6. Is further study adapting teaching styles to accommodate preferred learning styles warranted?

LITERATURE REVIEW

Terminology

In reviewing the literature several terms were found to be interchangeably. Some researchers discussed learning styles (Dunn and Dunn, 1979), others cognitive styles (Ramirez and Casteneda (1974) and Witkin (1977), others educational cognitive styles (Hill, 1972), Baecher, (1981). Spiridakis (1981) tries to explain the differences in terminology by stating that learning styles are

> hypothetical constructs that have been defined differently by various researchers and are still in an embryonic stage. (p. 308)

In an attempt to reach a consensus, the definition of learning styles developed by the National Task Force on Learning Style and Brain Behavior (in Bennett, 1986) is cited:

> Learning style is that consistent pattern of

> behavior and performance by which an individual approaches educational experiences. It is the composite of characteristic cognitive, affective and physiological behaviors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment. (p. 94)

In other words, in an educational setting a student's cognitive style is part of his or her learning style and, by extension, a teacher's cognitive style is part of his or her teaching style.

Describing Learning Styles

Several different paradigms for describing learning styles have evolved. Spiridakis (1981) and Baecher (1981) discuss the process of mapping a learner's Educational Cognitive Style, a process developed by Hill (1972). Style mapping seems to be a complex, somewhat cumbersome task, and the results do not appear to be particularly easy to interpret.

More useful for the purposes of the classroom teacher is the Learning Style Inventory (LSI) paradigm developed by Dunn, Dunn & Price (1975). Spiridakis (1981) lists the 5 categories of learning styles surveyed in the LSI:

1. Environmental elements: sound, light, temperature, design
2. Emotional elements: motivation, persistence, responsibility and need for structure.
3. Sociological elements: working alone; with peers
4. Perceptual Modalities: auditory, visual, tactile, kinesthetic
5. Psychological preferences: field dependence/independence, cooperative/competitive, reflective/impulsive (p.310)

Reid's 1987 study surveyed preferences for 6 of the learning styles listed by Dunn, Dunn & Price. In this study, 12 variables were used because they seemed to relate to behaviors that could be easily responded to in a classroom environment. Those style variables include:

Modes of perception:	auditory/visual/tactile/kinesthetic
Social preference:	group/individual
Conceptual time:	reflective/impulsive
Psychological elements:	field dependent/independent
	competitive/cooperative

These styles are defined in Appendix I.

Determining Learning Styles

Corbett and Smith (1984) list three ways of determining learning styles.

> Error analysis, the daily observation of student behavior, and the inventorying of strategies for learning by means of standardized paper and pencil instruments are three procedures for collection and analysis of data. (p. 212)

Several studies (Abraham, 1985; Stansfield and Hansen, 1983; Hansen, 1984) use the GEFT (Group Embedded Figures Test) (Witkin, Oltman, Raskin & Karp, 1971) to determine field independence or dependence. Since the GEFT looks only at this variable pair, we a broader instrument was selected for this study.

Reid (1987) discusses techniques which "began to be developed to identify the more external, applied modes of learning styles." One of the best known instruments of this type is The Learning Style Inventory (Dunn, Dunn & Price, 1975), which is

> a self-reporting questionnaire that enables public school students to identify their learning style preferences (p. 89).

Reid believes that the questionnaire is a valid instrument for assessing learning style. She cites findings from Dunn & Dunn to support her assertion.

> The research findings of the Dunns and their colleagues verify that most students do correctly identify their learning strengths, particularly when an element is strongly preferred or rejected. (p. 90)

Reid created a 30-item survey form designed for university-level ESL students. For our study, a survey format similar to Reid's was used.

Cognitive Flexibility

Ramirez, Macaulay, Gonzalez, Cox and Perez (1977) found that the process of becoming bilingual can help children develop the ability to use different learning styles effectively.

> ...these [bilingual] children could switch between a field-sensitive or field independent approach depending upon the requirements of the task they were presentend with or the environmental characteristics of the situation. ... Findings obtained by Bain, (1974, 1975) also support the observation that bilingual/bicultural children have more cognitive flexibility. (p. 43)

In this study, we wished to see if our Mexican students would demonstrate a limited number of learning style preferences, or if they had developed sufficient cognitive flexibility to comfortably state preferences for different and even contrasting learning styles. If cognitive flexibility were found, it would be posited that the process of learning a second language had helped in developing this ability to function comfortably with different learning styles.

Describing Teaching Styles

Dunn & Dunn (1979) describe teaching style as a set of at least 11 characteristics that determine the ways one facilitates learning. Among these are educational philosophy, student preferences, teaching environment, room design, teaching characteristics, teaching methods and evaluation techniques. (pp. 241-242).

Fischer & Fischer (1979) describe teaching style as "a classroom mode, a pervasive way of approaching the learners that might be consistent with several methods of teaching". They posit six categories, including: task oriented, cooperative planner, child centered, subject centered, learning centered, emotionally exciting and its counterpart. (p. 251). While both these descriptions offer valuable insights into the teaching process, they are of limited use to this study because the categories do not easily match learning style types.

In order to easily compare learning and teaching styles, the definitions of learning styles have been adapted to make teaching style categories. Thus, a field dependent teaching style facilitates learning for students with a field dependent learning style. A cooperative teaching style facilitates learning for students with a cooperative learning style, and so on. In this study, there are 12 teaching styles to match the 12 learning styles being considered. (See Appendix I.)

Determining Teaching Styles

Dunn & Dunn (1979), Kuchinskas (1979), and Fischer & Fisher (1979) use observation as the principal method of determining teaching style. Check lists are used to identify behaviors that fit into one of the categories on the list. Tallies then determine dominant and secondary teaching styles. This process requires an investment of time and skill unavailable in most school settings. Consequently, it was decided to use a survey technique to ascertain the teaching style preferences of colleagues. The assumption here is that if students can accurately report their preferred learning styles, teachers should be able to report their preferred teaching styles.

Learning Styles Become Teaching Styles

Dunn and Dunn (1979) found that a teacher's learning style becomes his or her teaching style.

> In our investigations into individual teaching styles, we found that instructors believe that the way they learn is the "easy" or "right" way, and that they therefore direct their students, offspring, and spouses toward mastering knowledge in much the same manner." (p. 241)

Kuchinskas (1979), for example, discusses the effect that teaching style has on learning.

> In the classrooms I visited ...I saw the same pattern at work--overwhelmingly, the teacher's cognitive style determined how students would learn. The teacher's cognitive style influenced the learning environment more than any other factor. (p. 270)

Style Mismatch

Reid (1987) believes that the difference between learning and teaching styles can affect learning.

> In many cases, neither students nor teachers are aware that difficulty in learning class material, high frustration levels, and even failure may not rest solely in the material itself." (p. 91)

Ramirez, Macaulay, Gonzalez, Cox & Perez (1977) cite similar findings.

> Professors and students with similar cognitive styles tended to describe each other in highly positive terms, while those people whose cognitive styles were different had a strong tendency to describe each other in negative terms. In addition, DiStefano found that professors tended to give students whose cognitive styles were similar to their own higher grades than those students whose cognitive styles were different from their own. (p. 44).

New Styles Can Be Learned

Fischer & Fischer (1979) believe that learners can develop the ability to function effectively with different learning styles.

> We make the assumption that most human beings can be changed and that, therefore, to some extent at least, both learning and teaching styles can be changed. (p. 254)

Bennett (1986) agrees.

> One can assume that teachers, unless they learn to do otherwise, expect their students to learn the same way they themselves do...A teacher's learning style doesn't have to become a teaching style straightjacket; teachers can learn to be flexible and teach in a variety of ways. (p. 95)

Le Compte (1981 believes the burdon is on the teacher to understand the preferred styles of each learner an to sow the seeds for flexibility in the learner.

Matching Learning Styles and Teaching Styles

Dunn and Dunn (1979) state that in certain circumstances, there are many benefits to matching teachers and students with similar styles.

> Extensive observations and research verify significant improvement in both student achievement and motivation when learning and teaching styles are matched....It is precisely those students who are most difficult and who absorb most of our attention whose learning styles do not match the kid of instruction to which they are being exposed--and who most need the organized, sensitive matching of their learning characteristics with an appropriate teaching style.

They assert further, however, that the logistics of style matching make it impractical. An alternative to style matching is expanding the teacher's repertoire to include techniques the facilitate learning through a large number of learning styles.

Kagan and Buriel (1974), suggest that for optimal learning, "a culturally democratic learning environment" which utilizes a variety of teaching styles should be implemented.

THE SURVEY, DESIGN, SUBJECTS AND PROCEDURES

Two forty-two item surveys, one for students and one for teachers, were administered in the language department of the University of the Americas (UDLA), Puebla, Mexico during the Spring semester, 1989. (See Appendices I and II.) The first ten questions of each survey identified cultural, academic and geographical variables. The remaining questions asked respondents to choose among behaviors relating to the styles they prefer when they learn or teach English. These behaviors have been related in the literature to specific learning styles.

Validation

Face validity was established by asking colleagues to match the survey questions with the definitions of learning and teaching styles (Appendix III). The survey content evaluators also provided helpful suggestions concerning rephrasing questions to improve clarity.

RESULTS AND DISCUSSION

PART I. Student Survey

A total of 420 students, evenly distributed among male (221) and female (199) students, completed the survey. While all the students surveyed are Mexican, they are certainly not representative of their country, their age group, or even the university population of the country. The UDLA is a fairly expensive private university. Students without at least some financial resources cannot meet the tuition costs and do not apply. They attend the state university in Puebla. In addition, entrance requirements are rigorous. Consequently, the UDLA student population represents only a limited segment of the Mexican university population.

1. The five most frequently preferred learning styles were Reflective, Cooperative, Visual, Kinesthetic and Individual. They were chosen consistently by a majority of students across age, geographical and academic variables. Interestingly, the preference for kinesthetic activities was expressed most often as B:"sometimes" rather than A: "always". For this reason, the kinesthetic preference is not reflected in some tallies, which looked only for A: "always" and disregarded all other responses. The following class of 16 students is typical.

TABLE 1
LEARNING STYLE PREFERENCES DEMONSTRATED BY ONE ESL CLASS
(N=16)

STYLE	% Showing Preference A (Always) or B (Sometimes)
Individual	88
Reflective	81
Visual	81
Cooperative	75
Auditory	69
Group	56
Kinesthetic	50

The remaining 5 styles were selected by less than 50 percent of the students.

2. Responses to the 10 questions dealing with field dependence/field independence were more varied than expected. More than other learning styles, FI/FD selections showed a greater range. Four survey item responses showed a strong preference (2 FI and 2 FD), while the other 6 showed no clear preference when the total student survey population was considered. For example, item 39, measuring field dependence:

> I learn better when I can memorize information just as the teacher gives it to us in class, rather than use what I've learned to make something new.

received the following responses:

A. ALWAYS	B. SOMETIMES	C.ALMOST NEVER	D. NEVER	E. DON'T KNOW
42	138	124	104	7

This indicates considerable cognitive flexibility on the part of the UDLA students. They seem to be comfortable with both field independent and field dependent learning. The percentages of students indicating strong preference (A. ALWAYS or B. SOMETIMES) for these learning styles was high, but not as high as those measuring preferences for reflective, cooperative, visual learning and many other styles. There seemed to be more flexibility with regard to the FI/FD variables.

TABLE 2
LEARNING STYLE PREFERENCE FOR FIELD IND/FIELD DEP LEARNING

LEARNING STYLE	RANK ORDER	% OF STUDENTS INDICATING STRONG PREFERENCE FOR THAT LEARNING STYLE
Field Independent	7	72
Field Dependent	10	68

3. There were no differences in learning style preference according to sex. Male and Female respondents were similar in preferences, although the females indicated stronger preferences.

TABLE 3
TOP 5
PREFERRED LEARNING STYLES
BY SEX OF STUDENT
(N=420 [221 males, 199 females])

MALES		FEMALES	
Reflective	(79%)	Reflective	(100%)
Cooperative	(70%)	Cooperative	(82%)
Auditory	(65%)	Individual	(82%)
Individual	(64%)	Auditory	(80%)
Visual	(59%)	Visual	(79%)

4. In the four academic areas served by the Language Department, (Social Sciences, Humanities, Engineering, Business Administration), students chose the same five learning styles: auditory, visual, individual, reflective and cooperative. Strongest preferences were for reflective and cooperative learning.

5. The surveys were also evaluated for each class taught in the Language Department. The same preferences prevailed, although 50% or more of the students also indicated a preference for kinesthetic activities in 13 classes and 50% or more indicated a preference for tactile activities in 6 classes. Thirty-two classes participated in the survey.

6. By academic average, students continued to select auditory, visual, individual, reflective and cooperative learning styles.

Interestingly enough, students with a GPA of less than 7.0 out of 10 (that is, those in danger of failing) chose visual, tactile, kinesthetic, group, reflective and cooperative. The preferences here for tactile, kinesthetic and group learning, where more successful peers did not choose these styles as often, may

indicate that these styles are not as productive in the UDLA setting.

A breakdown of students by their grades from the last English course completed, however, does not show any style differences. There was a preference for auditory, visual, individual, reflective and cooperative learning selected by students who had earned 7.0 or less. These were also the learning styles selected by students who had earned more than 9.0.

7. There appear to be no learning style preferences along geographic lines, although stereotypes of behavior types for people from different regions are common topics of conversation at the UDLA. People from the state of Puebla, the site of the UDLA, are notoriously clannish, while people from the state of Veracruz are said to be more outgoing, sociable, and less studious. People from the capital city, the D.F., are sometimes considered haughty. Despite these beliefs, we found no marked differences in learning style preferences along geographical lines, although students from Mexico City showed a slight preference for kinesthetic and impulsive learning and students from Veracruz selected group learning in addition to auditory, visual, reflective and cooperative.

8.In no class or group was competitive selected by a majority of students. This was the learning style for which the least preference was shown.

TABLE 4
SURVEY OF TEACHING AND LEARNING STYLES
UNIVERSITY OF THE AMERICAS, PUEBLA, MEXICO
SUMMARY OF STUDENT SURVEY RESULTS

Percentages of students selecting either A (always preferred) or B (sometimes preferred).

LEARNING STYLE CATEGORY	STYLE			
Modes of Perception	Auditory	Visual	Tactile	Kinesthetic
	75	82	69	79
Social Preferences	Group	Individual		
	70	79		
Conceptual Time	Impulsive	Reflective		
	67	92		
Psychological Elements	Field Ind.	Field Dep.	Competitive	Cooperative
	72	68	47	85

LEARNING STYLE PREFERENCES
RANK ORDER

STYLE	% INDICATING STRONG PREFERENCE (A [Always] or B [Sometimes])
Reflective	92
Cooperative	85
Visual	82
Kinesthetic	79
Individual	79
Auditory	75
Field Ind.	72
Group	70
Tactile	69
Field Dep.	68
Impulsive	67
Competitive	47

RESULTS AND DISCUSSION

PART II: Teacher Survey

1. Twenty-eight teachers participated in the survey; 4 male, 24 female. Just as students showed a preference for several different learning styles, the UDLA ESL teachers showed considerable flexibility in teaching styles. (For these data summaries, a teacher had to indicate A:ALWAYS. The secondary preference B:SOMETIMES was not considered.) Males indicated preferences for cooperative as well as competitive teaching; they also selected visual as a preferred teaching style. Female teachers selected cooperative teaching as the most preferred teaching style (21 of 24). They also selected reflective and individual as teaching styles of choice.

TABLE 5
PREFERRED TEACHING STYLE BY SEX

TEACHING STYLE	% MALES (N=4)	% FEMALES (N=24)
COOPERATIVE	100	88
COMPETITIVE	75	8
VISUAL	75	17
REFLECTIVE	50	63
INDIVIDUAL	50	42

2. Looking at the 28 teachers as a group, we find that 6 teaching styles were selected by more than 50% of the respondents.

TABLE 6
TEACHING STYLES PREFERRED BY AT LEAST 50% OF TEACHERS

TEACHING STYLE	PERCENT SELECTING A: ALWAYS or B: SOMETIMES
Cooperative	93
Reflective	80
Auditory	65
Group	65
Field Dependent	59
Individual	53

3. When the teachers were grouped according to the number of years they have been teaching, the respondents indicated a strong preference for cooperative and reflective and individual teaching. In fact, these were the only teaching styles selected as a strong preference (i.e. A:ALWAYS) by a majority of the teachers in the respective groups.

TABLE 7
TEACHING STYLE PREFERENCE BY NUMBER OF YEARS TEACHING

NUMBER OF YEARS	1-3 (N=7)	4-6 (N=9)	7-10 (N=4)	More than 10 (N=8)
% CHOOSING				
Cooperative	86	89	75	100
Reflective	71	56	50	63
Auditory	14	33	25	13
Group	43	11	25	38
Field Dependent	29	33	25	25
Individual	29	44	75	38

4. The preferences for Cooperative, Reflective and Individual teaching were consistent across ethnic lines.

TABLE 8
TEACHING STYLE PREFERENCE BY ETHNIC ORIGIN

ETHNIC ORIGIN	Anglo-American (N=14)	Mexican (N=7)	Mexican-American (N=2)	Other* (N=5)
% STRONG PREFERENCE FOR THIS TEACHING STYLE				
Cooperative	93	86	50	100
Reflective	50	57	100	80
Auditory	21	29	50	20
Group	29	14	50	40
Field Dependent	21	42	50	40
Individual	43	57	50	20

* (Other = German, French, Polish)

5. There were only slight differences in teaching styles when academic area was considered. For example, a majority of ESL teachers of engineering students reported individual or visual teaching styles. Only in the areas of social studies and humanities did the majority of ESL teachers select a group teaching style. No teachers of business students chose an auditory style.

When compared to student preferences, a much larger percentage of students indicated a preference for auditory and visual sytles than did teachers. Teachers of humanities and social science students expressed a preference for group teaching; social science students did not indicate this preference.

TABLE 9
TEACHING STYLE PREFERENCE BY ACADEMIC AREA

ACADEMIC AREA:	Humanities and Social Sciences (N=9)	Business Administration (N=10)	Engineering (N=9)
% CHOOSING			
Cooperative	89	90	89
Reflective	56	50	78
Individual	33	40	67
Visual	11	30	56
Auditory	33	0	33
Group	56	20	11

TABLE 10
SURVEY OF TEACHING AND LEARNING STYLES
UNIVERSITY OF THE AMERICAS, PUEBLA, MEXICO
SUMMARY OF TEACHER SURVEY RESULTS

Percentages of teachers selecting either A (always preferred) or B (sometimes preferred).

LEARNING STYLE CATEGORY	STYLE			
Modes of Perception	Auditory	Visual	Tactile	Kinesthetic
	65	46	16	43
Social Preferences	Group	Individual		
	65	53		
Conceptual Time	Impulsive	Reflective		
	16	80		
Psychological Elements	Field Ind.	Field Dep.	Competitive	Cooperative
	38	59	21	93

TEACHING STYLE PREFERENCE
RANK ORDER

STYLE	% INDICATING STRONG PREFERENCE (A [ALWAYS] or B [SOMETIMES])
Cooperative	93
Reflective	80
Auditory	65
Group	65
Field Dep	59
Individual	53
Visual	46
Kinesthetic	43
Field Ind	38
Competitive	21
Tactile	16
Impulsive	16

TABLE 11
SURVEY OF TEACHING AND LEARNING STYLES
UNIVERSITY OF THE AMERICAS, PUEBLA, MEXICO
COMPARISON OF STUDENT AND TEACHER SURVEY RESULTS

STRONG.LEARNING STYLE PREFERENCES			STRONG TEACHING STYLE PREFERENCES		
RANK	STYLE	%	RANK	STYLE	%
1	Reflective	92	1	Cooperative	93
2	Cooperative	85	2	Reflective	80
3	Visual	82*	3	Auditory	65
4	Kinesthetic	79*	4	Group	65
5	Individual	79	5	Field Dep	59
6	Auditory	75	6	Individual	53
7	Field Ind	72*	7	Visual	46
8	Group	70	8	Kinesthetic	43
9	Tactile	69*	9	Field Ind	38
10	Field Dep	68	10	Competitive	21
11	Impulsive	67*	11	Tactile	16
12	Competitive	47	12	Impulsive	16

* = More than 30 percentage point difference.

IMPLICATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

In order to assure that survey results are valid, it would be advisable to use another instrument, such as the LSI or the GEFT to cross-validate the findings. Time constraints made this impossible. However, the high percentages of students and teachers selecting certain behaviors that are indicative of specific teaching and learning styles lends support to the following conclusions:

1. UDLA ESL students demonstrated a considerable degree of cognitive flexibility. They seemed to be comfortable learning through different perceptual modes, for example. Auditory, visual and kinesthetic learning were all chosen by over 75% of the students. Tactile learning was also chosen by 69% of the students. This indicates that a majority of the students felt they could learn well by employing any or all of the four perceptual modes.

2. While the students as a group showed considerable cognitive flexibility, not all individual students exhibited this trait. Some indicated preferences for only a limited number of styles, as did some teachers.

3. Neither UDLA students nor teachers showed a preference for impulsive learning or teaching. Students seem to want time to consider their responses and teachers seem to give them this time.

4. UDLA male teachers showed a strong preference for competitive teaching, but competitive learning was the style given the least preference by students.

5. Style matching, while sometimes desirable, may be impractical on a large scale. A more reasonable approach is to expand the teacher's teaching style repertoire to accommodate various learning styles.

6. Teachers could survey their students with this survey instrument to find the preferred learning styles of each class, and of each individual. This would help in the selection of appropriate teaching activities.

7. Students could occasionally be grouped according to preferred learning styles for learning activities designed for that particular style.

8. A special effort could be made to help students develop increased cognitive flexibility when they demonstrate that they are bound to only a few learning styles.

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